REMARKS

Reconsideration and withdrawal of the rejections set forth in the Office Action dated November 27, 2007 are respectfully requested. The applicants' representative wishes to thank the Examiner for the thorough Office Action, particularly for the citations to portions of the applied references. Claims 1-3, 6, 7, 9, 14, 15, and 17 are pending in the application. Claims 4, 5, 8, 10-13 and 16 have been canceled to expedite prosecution of this application. Claims 1-3, 6, 7, 9, 14, 15, and 17 are have been amended to clarify aspects of the subject matter for which the applicants seek protection. Support for the amendments may be found, for example, in Figure 4A and paragraphs [0049] and [0056].

Interview with the Examiner

The applicants wish to thank Examiners Rutz and Sparks for meeting with the applicants' representatives on February 27, 2008. During the interview, the applicants discussed proposed amendments to the claims and the cited references. As discussed, the applicants have amended the claims to satisfy the concerns of the Examiner and to clarify aspects of the subject matter for which protection is sought. Should the Examiners require additional details regarding the substance of the interview, the Examiners are encouraged to contact the undersigned representative.

Rejections Under 35 U.S.C. § 102

Claims 14-15 and 17 stand rejected under 35 U.S.C §102(e) as being anticipated by U.S. Patent No. 6,366,986 to St. Pierre et al. ("St. Pierre"). The applicants respectfully traverse the rejection.

As discussed in the interview, the applicants have amended the claims to clarify the "quick recovery volume" and "parameters" as recited. Specifically,

amended claim 14 is directed to a method for periodically copying changed data on a primary volume, including:

> storing the first snapshot and the associated application specific information to a destination volume, wherein storing the first snapshot and the associated application specific information creates a copy of the primary volume that facilitates a logical connection between the first snapshot of the data and an application that created the data;
>
> performing a second snapshot of a particular block when the monitoring determines that there was a change in the particular block after the first snapshot was performed; and
>
> storing the second snapshot to the destination volume.

That is, the method creates a destination volume that includes a snapshot of a primary volume and application specific information about an application that created data tracked by the snapshot. The method further performs additional snapshots when changes are made to the primary volume, and stores the additional snapshots in the destination volume. Thus, in some cases, the method of claim 14 facilitates "quick recovery" of data by creating a destination volume for a copy of a primary volume that (1) associates stored data with application specific information, and (2) includes snapshot copies of data that has changed after an initial copy of the primary volume of the data. As a result, individual files may be restored because the system stores information about the location of the file as well as information specific to the application that created the files.

St. Pierre does not disclose such features. In contrast, St. Pierre discloses methods of differential backup, where "only some segments of data of a primary copy are backed up" (St. Pierre at Abstract). Although St. Pierre does disclose tracking changes in data and then performing incremental backups

when there are changes in the data, St. Pierre does not disclose storing these backups with "associated application specific information," as recited, nor creating "a copy of the primary volume that facilitates a logical connection between the first snapshot of the data and an application that created the data," as recited.

For example, St. Pierre discloses the use of a "logical bit mask," where "the actual physical storage devices 204-206 may not know how this corresponds to logical elements at the application level" (St. Pierre at 15: 52-56). St. Pierre provides additional detail regarding the use of logical backup methods:

> Indeed, the actual physical storage devices may have no way to determine what data segments are associated with each other (St. Pierre at 15: 59-61), and

> The data to be backed up is presented independent of the manner in which it is physically stored on storage system 52 at the physical storage system level 16, independent of the file system level mechanisms on the client 50, and independent of how data is stored on the backup storage device 54 (St. Pierre at 9: 42-47).

Thus, as St. Pierre admits, its system does not identify an application associated with a block of data, let alone individual files. The applicants' system, however, does incorporate knowledge of applications that create data when storing the data to a destination volume, in order to facilitate quick recovery of the data, among other things. For example, an "intelligent data agent":

> makes objects that are native to particular applications part of the snapshot image, which enables the user to perform actions in terms of the applications' objects. This enables, for instance, browsing snapshot images or volumes of EXCHANGE data that will

be visible in terms of Storage Groups and stores, rather than just a volume of directories and files. For particular applications, such as EXCHANGE or SQL server, a further level of detail with regard to the objects may be included, such as paths to EXCHANGE objects, such as Storage Groups or stores, or paths to SQL objects, such as databases, file-groups, or files (Specification at paragraph [0056]).

Thus, St. Pierre does not incorporate knowledge of applications that create data when storing the data to a destination volume and therefore cannot anticipate claim 14.

Claim 17 has been amended to recite features similar to those of claim 14. For example, claim 17 recites "identifying characteristics associated with the data blocks; storing the characteristics in an index; and copying the data blocks tracked by the snapshot to a destination volume via the snapshot."

Therefore, for at least these reasons, the applicants respectfully submit that claims 14 and 17 are patentable over the cited art, and request their allowance.

<u>Rejections Under 35 U.S.C. § 103</u>

Claims 1, 10, 16, and 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over St. Pierre in view of OFFICIAL NOTICE. The applicants respectfully traverse the rejection.

As discussed in the interview, the applicants have amended the claims to clarify the "quick recovery volume" and "parameters" as recited. Specifically, amended claim 1 is directed to a method of creating a quick recovery volume of a primary volume of data in a storage management system having two operations, a "snapshot operation" and a "copy operation."

The snapshot operation includes:

quiescing the primary volume of data;

taking a first snapshot of the primary volume of data;

after the first snapshot is taken, dequiescing the primary volume of data; and

indexing the first snapshot by associating respective information with the first snapshot.

That is, the snapshot operation suspends access to the primary volume in order to take a snapshot of the primary volume and then reinstates the access.

The copy operation includes:

selecting the first snapshot as a source of data to copy to a quick recovery volume, wherein the quick recovery volume includes information about an application that created the data of the primary volume;

parsing the data to be copied to the quick recovery volume;

logically addressing the data to be copied to the quick recovery volume,

performing a block-level copy of the parsed and logically addressed data of the selected first snapshot to the quick recovery volume; and

deleting the selected snapshot after the block-level copy is complete.

That is, the copy operation uses the snapshot as a source of data in creating a copy of a primary volume, parses and logically addresses the data to provide information about an application that created the data, and then performs a block-level copy of the data to create the quick recovery volume. Thus, in some cases, the quick recovery volume is created by minimized access to a

primary volume (via the snapshot phase) and provides a detailed level of granularity and application specific information to data stored within the volume.

As discussed above, St. Pierre does not disclose such features. Furthermore, the Office Action takes OFFICIAL NOTICE to suggest that deleting a snapshot would be obvious to one or ordinary skill in the art, and not to other features of the claim not discloses or suggested by St. Pierre. The applicants respectfully request the Examiner provide support in the art for the taking of OFFICIAL NOTICE with respect to supplying the elements absent in St. Pierre.

Thus, the cited reference and the taking of OFFICIAL NOTICE do not support a *prima facie* case for obviousness with respect to amended claim 1.

Thus, for at least these reasons, the applicants respectfully submit that claim 1 is allowable over the cited references, and requests its allowance.

Conclusion

Overall, the cited reference does not teach or suggest the features recited in independent claims 1, 14 and 17 and thus such claims are allowable. Since these independent claims are allowable, based on at least the above reasons, the claims which depend from them are likewise allowable. If the undersigned representative has overlooked a relevant teaching in the reference, the Examiner is requested to point out specifically where such teaching may be found.

In view of the foregoing, the claims pending in the application patentably define over the applied art. A Notice of Allowance is, therefore, respectfully requested. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-3090.

The applicants believe all fees due with this response are submitted herewith. However, if an additional fee is due, please charge our Deposit Account No. 50-0665, under Order No. 606928008US1 from which the undersigned is authorized to draw.

Dated:

4/16/08

Respectfully submitted,

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